GremliNews

A Sega/Gremlin Employee Newsletter | Volume 2, Number 3 | May/June 1982

Home of Sega/Gremlin Industries.

Welcome To SEGA/Gremlin

Open House
Saturday, May 15, 1982
Invited Guests–10:30 a.m. to noon
Employees and Family–1:30 p.m. to 4:30 p.m.

Program

Welcome–P.W. Gorrie, Master of Ceremonies

Introduction of Officers:
David Rosen, Chairman/President
SEGA Enterprises, Inc.
H. Frank Fogleman, Vice-Chairman of the Board
Duane M. Blough, President
Gene A. Candelore, Vice-President, Manufacturing
Gerald H. Hansen, Vice-President, Engineering
Peter W. Gorrie, Vice-President, Administration/Controller

Remarks–The Honorable Pete Wilson,
Mayor, City of San Diego

"SEGA/Gremlin"–Duane M. Blough, President

"The Video Game Business"–Dave Rosen, Chairman of the Board

Plant Tour:
Hosts: Duane Blough, President
Gene Candelore, Vice-President, Manufacturing
David Dodd, Manufacturing Manager
Elizabeth Falconer, Marketing Analyst
Frank Fogleman, Vice-Chairman of the Board
Robert Harmon, Sales Manager
Robert Klinefelter, Customer Service Manager
Art Kohrmann, Quality Control Manager
David Nielsen, Director of Material
Virgil Otto, Supervisor, Test
Leonard Wisz, Director of Marketing
Ronald Stein, Video Producer

A Chronology

1970 Gremlin Industries is organized with offices at 3555 Aero Court
1972 Gremlin enters the game market
1973 Gremlin moves to larger quarters at 7030 Convoy Court
Gremlin produces the world's largest circuit board (Playball)
1975 Gremlin has 45 employees
1976 Gremlin moves to newly built facility at 8401 Aero Drive
September–First thematic video game (Depth Charge) built at Gremlin
November–Slogan "Games People Really Play" used
1977 June 2–First employee management luncheon held
June 6–First safety committee meeting held
June–Employee Recreation Fund established
1978 September–Sega acquires Gremlin
1980 May–Gremlin expands further to 9454 and 9455 Chesapeake Drive
Gremlin Special Projects started at the site of Gremlin's beginnings, Smythe Building–3555 Aero Court
1981 Gremlin acquires Wood Products Division, 7077 Consolidated Way
Gremlin has 900 employees
1982 February–Gremlin moves to its present facility at 16250 Technology Drive in Rancho Bernardo

Open House Committee

Dennis Clark, Dave Dodd, Ralph Hawkinson, Carol Johnson, Bert Nishimura, Ron Stein, Leonard Wisz.

1. LOBBY
Welcome to SEGA/Gremlin. These portals lead you to a realm of make-believe. Please note samples of our latest coin-operated games. FROGGER, TURBO, AND ZAXXON.

2. VIDEO SHOW
Today, we are showing you our Company in operation via video, which we use extensively in our training.

3. EXECUTIVE AREA
With the exception of the Engineering Department, this is where the principal officers are located.

4. MATERIALS
Cost Accounting, Quality Assurance, Director of Materials, Production Control, Materials Planning Group, and Purchasing are located here.

5. SECURITY
This is the main employee entrance. From the Security Office, television monitors scan both the interior and the exterior areas. Also, immediately accessible are two first-aid rooms.

6. STOCKROOM
We stock over 2,000 items. Many of these parts are common to most of the games we manufacture.

7. RECEIVING INSPECTION
All materials entering the system are first inspected for conformity to our strict standards. Rejected items are returned to vendors. All accepted materials go into stock.

8. RECEIVING
When parts and materials are received, they're either counted or weighed and checked against the manifests.

9. DOCK AREA
Trucks, vans, and trailers back into the dock area to load and unload. Forklifts and mechanical assists lighten the work.

10. SUB-ASSEMBLY
1. Here smaller assemblies, which cannot be built effectively on a conveyor, are built.
2. "J" boxes interface the game with the 110 volt power. They include inter-locks, fuses, and electro-magnetic interference filters.

11. AUTOMATIC INSERTION EQUIPMENT
There are three different types of machines in this area which are capable of handling axial leads, radial leads and integrated circuits.

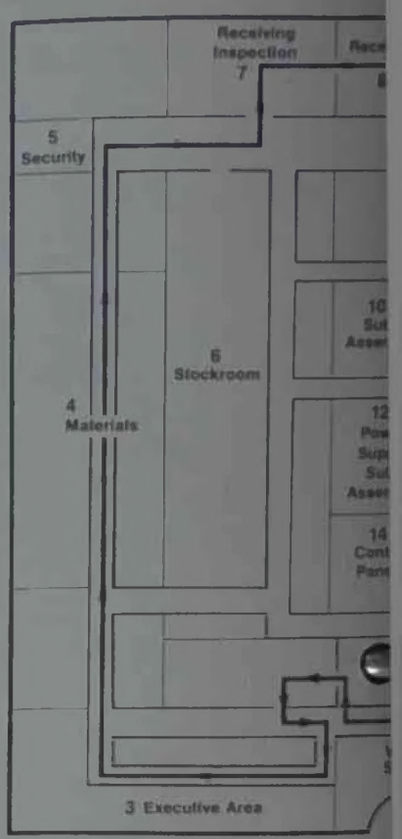
a. Axial lead components consist of resistors, diodes and some capacitors. There are two operations.
   1. **Sequencer**—Removes the components from a reel and retapes them in the sequence to be inserted into the printed circuit board. It operates at the rate of 25K per hour.
   2. **Inserter**—This machine positions the board, then bends and inserts the component into the printed circuit board, and then cuts and crimps the lead under the board at the rate of 12K components per hour.

b. Radial lead component insertion equipment is used for most capacitors and some transistors. The radial lead inserter does not retape the components as the axial sequencer, but instead sequences the component directly into the insertion head. It will insert radial components at the rate of 7K components per hour.

c. **Integrated Circuit Inserters**—This machine is capable of inserting sockets and IC's directly into the circuit board. The IC is positioned into the carrier head in the plastic tubes in which they are received and stocked. All dual in-line configurations from the 6 pin to 40 pin devices can be inserted at the rate of 3,500 integrated circuits per hour.

d. **Programming Equipment**—All of the automatic equipment in this area is computer operated and must be programmed to allow for the positioning and sequencing of the component insertion into the proper position on the printed circuit board.

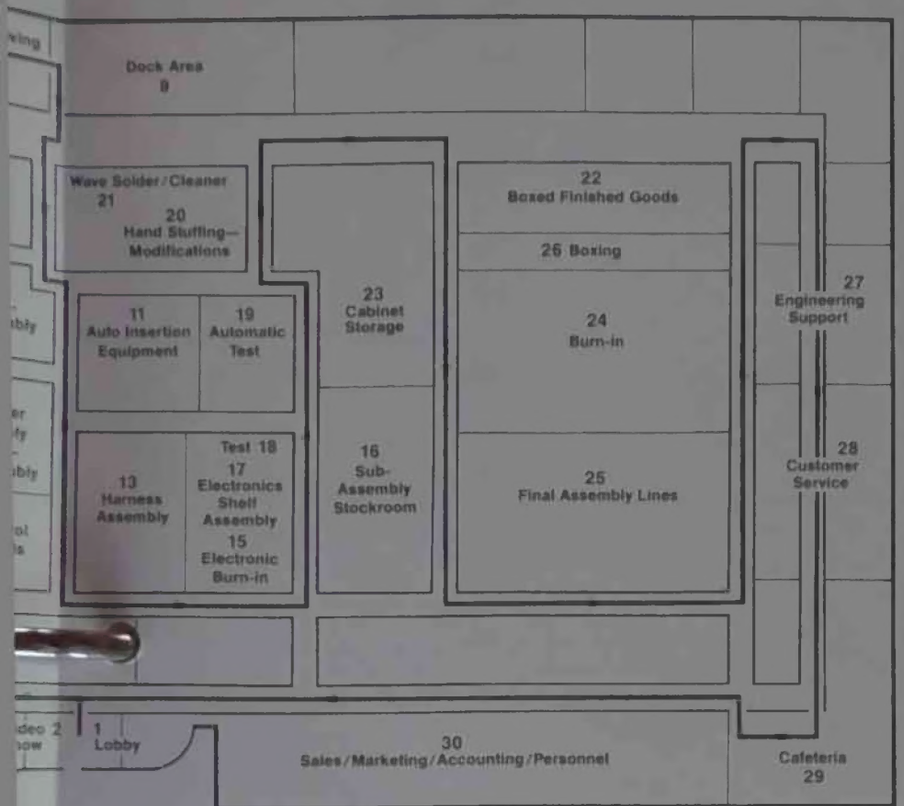
12. POWER SUPPLY SUB-ASSEMBLY
Numerous configurations of supplies are used to convert the 110 AC voltage to the DC voltage necessary to power the game electronics. The power supply is produced sequentially as it travels down the conveyor.



13. HARNESS ASSEMBLY
The Eubanks Wire Cutter automatically cuts and strips wires at the rate of 7,000 wires per hour

14. CONTROL PANELS
Parts are on conveyor belts where mechanical and electrical assemblies are done. A plastic covering and graphics are glued to the metal plates. Control buttons, joy sticks, and wirings are then installed.

15. ELECTRONIC BURN-IN
All components are subjected to 12 hours of burn-in at approximately 125 deg. F. to cause any weak



EGA/Gremlin Floor Plan

components to fail prior to being assembled in the final game. They are also tested after they are taken out from the burn-in.

16. SUB-ASSEMBLY STOCKROOM
All of the parts come together here. They are issued to the final line for assembly.

17. ELECTRONICS SHELF ASSEMBLY
The power supply and printed circuit boards are wired and harnessed in at this location.

18. TEST
Testing continues throughout. Here power supply and printed circuit board assembly are checked to insure they are working properly.

19. AUTOMATIC TEST
The Fluke Tester is a full functional tester of the integrated circuit board. It insures that components react properly to each other. It takes about four minutes to test each board.
The Zehntel Tester is a circuit tester. It tests the components individually in the board. It takes 20 to 45 seconds to test a board.

20. HAND STUFFING—MODIFICATIONS
As highly automated as we are it is still necessary to stuff some components individually. This is particularly true of modifications.

21. WAVE SOLDER/CLEANER
After the boards are stuffed, they pass over hot melted solder and through the cleaner which takes off all residue.

22. BOXED FINISHED GOODS
Monitors and cabinets pass through these aisles on their way to the final assembly line. These are finished games boxed and ready to be shipped.

23. CABINET STORAGE
These conveyor rollers are inclined so that all products move easily. Cabinets are stored, ready to roll.

24. BURN-IN
Finished games are plugged-in as if they are in the customer's place of business for at least six hours. This is called burn-in and insures that games are in operating condition when they leave the plant.

25. FINAL ASSEMBLY LINES
Games move automatically from station to station every three minutes. Cabinets are transferred to the final line on a roller. Skilled assemblers put on the graphics, install components, connect and activate each game. Inspectors check for quality standards, and technicians trouble-shoot and do rework directly on the line. Those that cannot be repaired on the spot are diverted to a re-work line.

26. BOXING
Finished games are banded for their final trip to the customer.

27. ENGINEERING SUPPORT

28. CUSTOMER SERVICE
We support our customers with fast service. There are repair facilities and a parts department to assist them. An Export Department handles all overseas movements.

29. CAFETERIA
Hot food is available to our employees. Regal Cafeterias operates the cafeteria.

30. SALES/MARKETING/ ACCOUNTING/ PERSONNEL
This wing houses the Sales, Marketing, Accounting and Personnel Departments.

David Rosen, Chairman/ President of Sega Enterprises, Inc.

David Rosen, Chairman and President of Sega Enterprises, Inc. (the parent company of Gremlin Industries), is largely credited with having developed the amusement games industry in Japan over
25 years ago.

Mr. Rosen is the founder of a predecessor company to Sega, and Sega/Gremlin's history closely parallels Mr. Rosen's efforts to pioneer the technologies which today have made commercial computer video games the fastest growing segment of the entertainment industry.

H. Frank Fogleman, Vice Chairman of the Board

Frank Fogleman is a native of East Tennessee and earned his EE degree at the University of Tennessee after serving four years in the US Navy maintaining radar and computer systems. He came to California in the mid '50s working in the aerospace industry. He conducted design work on the Atlas Guidance System at GD for 18 months before joining Arnoux Corporation in Los Angeles as production manager. Mr. Fogleman returned to San Diego to organize Aeromarine Electronics, Inc. a California corporation engaged in the design and development of ocean research instrumentation. He holds several patents in the fields of power switching, temperature measurement and ocean research. He left Aeromarine in 1967 to design the first briefcase telephone for CarryPhone of L.A.

In 1970 Frank Fogleman started Gremlin Industries developing and marketing several product lines for the oceanographic, civil engineering and fast food industries. By mid 1972 development was under way for the first of a series of coin operated games. Mr. Fogleman was President of Gremlin until 1980 at which time he became Vice Chairman of the Board. During those ten years Gremlin grew to a multi-million dollar corporation.

Duane M. Blough, President

Duane M. Blough has been in the computer video games business since October, 1975, when he joined SEGA as Executive Vice-President of the company's Japan subsidiary, SEGA Enterprises, Ltd., Tokyo.

Mr. Blough is a graduate of Grinnell College, Grinnell, Iowa. Prior to joining SEGA, he held management positions with General Electric Company, Cornell-Dubilier Electronics and General Instrument Corporation. He returned from Japan in October, 1980 to become President of Gremlin Industries.

Mr. Blough is a Director and Secretary/Treasurer of the Amusement Device Manufacturers Association, the trade association of U.S. manufacturers of computer video games.

Gerald L. Hansen, Vice President– Engineering

Mr. Hansen received an AB degree in electronic engineering from Central Technical Institute in Kansas City, Missouri and an AS degree in mathematics from San Diego City College. Upon discharge form the U.S. Army, where he served as an instructor in missile guidance systems, he was employed as chief engineer for radio station KITT in San Diego. He joined Cohu Electronics, Inc. in 1963 and worked in the capacity of systems engineer until joining their sales staff in 1966. Mr. Hansen joined Harlan Labs in 1969 as system manager before assuming his position with Gremlin Industries in April of 1970. He has written a book, "Introduction to Solid-State Television Systems," published by Prentice-Hall, and authored several trade journal articles.

In his spare time Mr. Hansen can usually be found at Gillespie Field working on the "Long-Eze" airplane he is building.

Peter W. Gorrie, Vice President– Administration and Controller

Mr. Gorrie is a graduate of San Diego State University, where he earned a Bachelor of Science degree in Accounting, with an emphasis in law

Born in Toronto, Canada, Mr Gorrie became a naturalized U.S. citizen in 1962, while serving in the U.S. Marine Corps. He came to Gremlin over four years ago, after having worked extensively in the San Diego industrial community. He now lives with his wife, Dolores, and their two children, Scott and Tami, in University City.

Gene Candelore, Vice President– Manufacturing Operations

Gene Candelore is one of the three original owners of Gremlin Industries and has been with the company just a little over 11 years. Mr. Candelore has worn many hats during his career with Gremlin–orginally he also handled all accounting functions and purchased and programmed the first computer.

Born and raised among rolling farmlands and horse ranches in the Midwest, Mr. Candelore still enjoys riding around hillsides of Bonita where he makes his home with his wife, Sharren, and their three children. Mr. Candelore also has three older daughters and three grandchildren

Mr. Candelore has had careers including Photographer for the U.S. Navy, involvement in the Aerospace Industry and calibrations and standards management. He also holds degrees in Accounting and Engineering.

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